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Amiga 500
Macintosh II
Atari XEGS
RPGs and
Strategy Games

NEW AMIGA 500. NOW OTHER HOME COMPUTERS ARE JUST TOYS.

Amiga 500 is here. With a mind-blowing array of features and capabilities. And a £499.99* price ticket (inc. VAT), hundreds of pounds less than anyone could have predicted. "...a miracle of compression..." writes *Popular Computing Weekly* "...it all adds up to a formidable system which is clearly better than anything else at the price."

This elegant little machine takes family computing into new dimensions of creativity, excitement and productivity.

It outruns and outgrows office PCs as a business multi-tasker, performing a deskful of different jobs simultaneously, at over 7 million steps per second in realtime.

So other home computers may not be the only machines it consigns to the toy cupboard.

AMAZING SCIENCE FACT.

Amiga is used by Disney, Universal and other Hollywood studios for its dazzling 3D graphics manipulation and animation powers.

A sophisticated high-speed graphics processor called a blitter chip transforms images in realtime.

You can paint the screen with more than 4,000 colours. Create and modify designs and effects as you like, with pin-sharp resolution.

You command an almost limitless workshopful of stunning professional graphics capabilities.

With an optional Genlock interface, you can capture images off videotape. Manipulate and mix



them with graphics. Then re-transfer them to videotape!

This means you can produce spectacular special effects like those created by Amiga computers for Channel 4's *Chart Show* and the American TV science fiction series *Amazing Stories*.

YOU AIN'T HEARD NOTHING YET

Concealed within the sleek Amiga shape, there is also a pro-quality sound synthesiser and four-track stereo sound system.

Driven by another powerful and unique custom chip, it can synthesise musical instruments and

sound effects. An optional digitiser allows you to take onboard real sounds. Mix and modify the two. Translate your compositions from keyboard to sheet music. Play them back through the monitor's speaker or your hi-fi.

Your Amiga can also synthesise the human voice. It can speak back anything you care to write on the keyboard. So this is one computer that can not only word process with faultless professionalism, and incorporate superlative graphics into the text, it can also read the text back to you aloud.

GAMESMANSHIP AND WORKMANSHIP!

The new Amiga 500, in fact, dumbfounds its competitors in every way.

Graphics, stereo sound, multi windowing, multi screens, 512K to 1Mb RAM (expandable by an incredible 8 further megabytes externally*), 3 1/2" internal disk drive with 880K of mass memory, 4 unique dedicated chips plus the 16/32-bit power and 714MHz speed of its central processor, communications and vast expansion potential all add up to a computer of immense professional capability.

Yet the same technology allows the Amiga 500 to play games so mind bending that only full-scale arcade machines have been able to play them until now.

AND AMIGA MEANS 'FRIEND'!

However many of the Amiga's extraordinary talents you find yourself using, they will all be beautifully simple and natural.

You will be totally at home in the friendly and effortless Amiga

environment, where everything happens by windows, icons, mouse and pull-down menus.



And the Amiga 500 simplifies life in another way too.

There is now no comparable home computer. At any price.

INCREDIBLY ONLY £499.99* INCLUDING VAT

Try the astonishing new Amiga 500 at your nearest Commodore Amiga dealer.

And discover why *Personal Computer World*, having tested the graphics performance of Amiga's latest and most powerful rival, concluded "...Amiga still reigns supreme..."



*Includes DeluxePaint from Electronic Arts worth £79 + VAT. (Excludes monitor or TV modulator. COMMODORE BUSINESS MACHINES (UK) LTD, COMMODORE HOUSE, THE SWITCHBACK, GARDNER ROAD, MAIDENHEAD, BERKSHIRE SL6 6JA. TELEPHONE: (0628) 720000. TELEX: 849505 COMMUK.



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Once **Amiga** had detangled itself from the tentacles of Jack Tramiel's **Atari Corporation**, **Commodore's** licensing agreement became a full-blown buyout, and the **Amiga** was announced in mid-1985 with a plan to have the machine widely available by Christmas. However, production issues meant the computer didn't begin shipping until November, and only 35,000 machines were sold by the end of the year.

Resultant cashflow problems meant marketing suffered, and sales in early 1986, limited largely to niche computer stores, were sluggish. A plan was hatched to re-invent the Amiga as two models: the **Amiga 500**, a lower-cost version meant as an upgrade to the Commodore 64 and a competitor to Tramiel's Atari ST; and the Amiga 2000, a higher-end workstation targeted at the creative market, intended to take on Apple's **Macintosh**.

Launched in the US in late 1987, the Amiga 500, unlike its predecessor, sold in department stores along side the **Commodore 64**. This improved sales immensely. Its stereo sound and high-resolution graphics were attractive to gamers, who were willing to pay the \$100 premium over the price of the **Atari ST** for what they saw as a better machine.

The **Amiga 500** would arguably win the war over the ST in North America and mainland Europe, but they would both eventually lose to the PC in the mid-1990s.

THE AMAZING AMIGA...

COMMODORE AMIGA 500



Pack Includes:
A500 CPU, Mouse, P.S.U., T.V. Modulator, Very First Tutorial, Workbench 1-3, Basic, Extras and Manuals.
PLUS POSTRONIX BONUS PACK WORTH OVER £250 which includes 10 Blank Disks, Disk Storage Box, 10 Excellent Games, Mouse Mat, Mouse Bracket (Mouse Holder) Deluxe Paint.
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When you first see a Commodore Amiga you'll be amazed at how much it can do. After you've seen its capabilities you won't be surprised that over a million Commodore Amigas have been sold worldwide.

That's because Commodore Amiga is the world's most advanced home and small business computer. It is also the leader in specialised applications such as Desktop Publishing, video graphic design and music.

It talks, animates, educates. Whether you're nine or ninety, student or teacher, Commodore Amiga has the software to aid learning. As well as these applications, it offers a wealth of enter-

tainment with the latest hi-tech video games.

The potential of the Commodore Amiga doesn't stop there. Commodore Amiga has thousands of software packages available as well as a huge range of supporting machines.

The Commodore Amiga 500 and 2000 make so much possible you're limited only by your imagination.

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Everything you never expected from a home computer. That's because we designed it to excite you. To dazzle your senses with 4096 colors and stereo sound. To unleash your creativity. To allow things you never dreamed possible. In a home computer. Because until now, they really weren't.

Like built-in speech synthesis, so you'll always have someone to talk to. Pro-quality 3-D animation that lets even beginners put their ideas in motion. Colorful educational programs that make lessons fun and memorable. A complete home office with powerful spreadsheet and database programs—even word processing with WordPerfect. And unlike any other home multi-task, so you can run several programs at the same time.

Hook it to your VCR with an optional RF modulator, and the Commodore Amiga 500 becomes a home video production center. Paint graphics over video images. Create moving 3-D titles. Produce your own animated feature.

And for pure fun, enter the incredible world of stereo Amiga video games. With use them in their coin arcade machines. AND NOW YOU CAN SEE IT ALL, FREE. We captured the excitement, beauty and power of the Commodore Amiga 500 on a special VHS video cassette called the Amiga 500 Video Test Flight. If you're ready for the ride of your life, call 1-800-87-AMIGA to find out how you can get your free video demonstration.

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COMMODORE
AMIGA
500

Only Amiga makes it possible.

It talks.
It animates.
It educates.
It's a home office.
It's a video studio.
It's arcade games in stereo.
It's the new Commodore Amiga 500 home computer.



Jay Miner, the former leader of Amiga Las Vegas and mastermind of the Amiga custom chip set, started things off at the first AmigaExpo as the premiere keynote speaker.

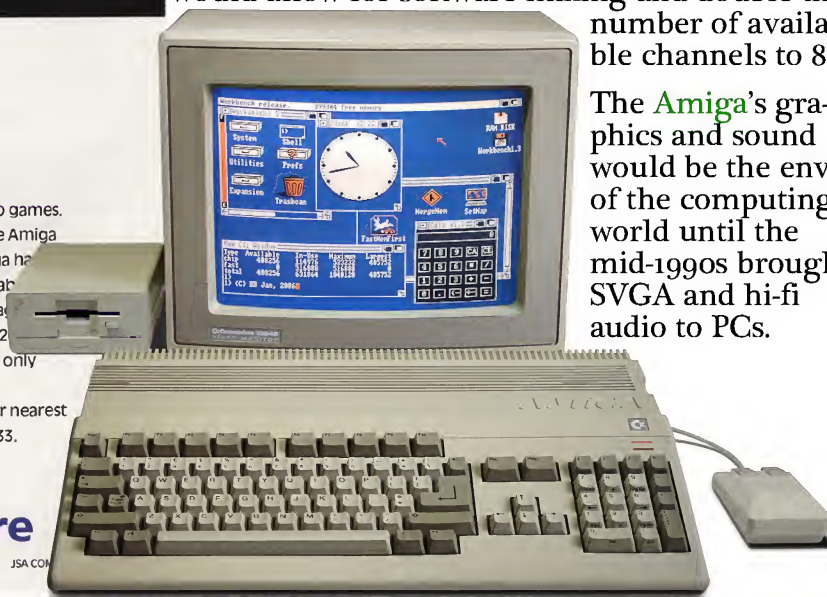
112 Amiga Computing 1/2.12 01987

Amiga designer Jay Miner earlier worked at Atari on the 2600; his team subsequently developed the integrated chips behind the 8-bit Atari home-computer line. When Warner Communications rejected Miner's proposal to develop a 16-bit machine, he left, and in 1982 he was approached to head hardware engineering on a new 16-bit game console. The project would quickly pivot towards a home computer instead, and a prototype was shown at the January 1984 Consumer Electronics Show.

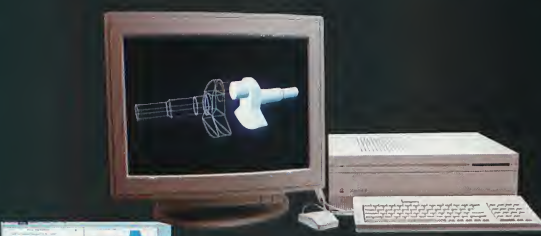
By late 1984, the components in the prototype had been consolidated into a number of custom chips, including a graphics chip that had the ability to "genlock", or match its frequency timing with that of another video signal, useful for overlaying an external video source with graphics, and a popular Amiga feature with videographers and TV stations.

The sound chip, codenamed Paula, sported stereo output, with each stereo channel mixing two digital hardware channels (for a total of four hardware channels, in comparison to the Atari ST's single hardware channel). Music software, known as "trackers" could send digital samples to each of these four channels (stored as the MOD file format); later, more advanced software would allow for software mixing and double the number of available channels to 8.

The Amiga's graphics and sound would be the envy of the computing world until the mid-1990s brought SVGA and hi-fi audio to PCs.



The best color graphics system for the Macintosh II.



See the difference...know the reasons

You are about to enter a new dimension in personal computing with the PCPC II™, a high resolution color graphics system for the Macintosh II. The PCPC II 19 inch monitor gives you a giant window into the color world of computer aided design, computer modeling, advertising, presentation graphics, desktop publishing and unlimited color applications. Designed for the most demanding professionals, the PCPC II provides the power and performance required to be your creative best.

Look at a PCPC II and experience the sharpest and most vivid colors possible. Witness a dazzling display of 256 colors from a palette of 16.8 million hues for the most realistic images possible. And for monochrome graphics, 256 shades of gray provide maximum detailing.

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Circle 223 on reader service card



The first colour Macintosh, the Macintosh II had an external display and internal slots, diverging from the previous all-in-one form-factor of the Macintosh line. It cost \$7145USD, as much as a cheap car!



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The **Macintosh II** had to be developed in secret, since **Steve Jobs** objected to both the idea of expandability (due to complexity) and colour (because colour printers were uncommon). To keep Jobs in the dark, internal managers referred to it by a number of codenames including "little Big Mac" and "Paris". After Jobs was fired from Apple, the project went on in the open. Introduced at MacWorld in 1987, the II initially shipped with a 20MB hard disk, 1MB of RAM and a 16-mhz Motorola 68020 CPU with a 68881 floating-point math co-processor.

Meanwhile, **Atari** looked to cash in on the video-game console resurgence with its Atari XE video-game system. Essentially a **65XE** in a different case, the **XE** came with an external keyboard and light gun, a few new games and a bunch of old ones re-designed to work without needing the keyboard. Unfortunately, with a library of tired titles and based on an aging hardware platform, the **XE** was doomed to fail, and struggled until its eventual discontinuation in 1992.

The Atari 5200 had initially been conceived as a similar re-packaging of the Atari 800 computer system, but management at Atari were concerned that compatibility could erode game sales, and the 5200 was intentionally made incompatible, which led to a lack of titles that doomed the console.

Atari would have benefitted from a time-machine.



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The machine becomes a home computer reality on December 1987

RAMPAGE

the biggest cult game EVER!

After... Arcade Action VIDEO GAMES

Officially licensed from one of the most original and popular arcade games ever created, Rampage is the game where the nice guys don't get a look in, and jump on San Francisco. This is your chance to become one of three indescribably monstrous characters on a rampage through 85 cities in an enduring 768 different days of destruction.

Steve Wozniak's **Breakout** would see a revival in the arcade-
 "smash" (pun intended) **Arkanoid**, popular on 16-bit home computing
 platforms like the **Amiga**. The launch of the **Amiga 500** and discounting
 of the **Atari ST** encouraged game developers to invest in these newer
 systems, and consequently, availability of higher-quality versions of current
 arcade titles drove 16-bit computer sales.

Role-playing games would also begin to get the 16-bit treatment. **Activision**
 published dungeon-crawler **Knightmare** (based on a popular UK childrens'
 show) in 1987 for both the ZX Spectrum (still wildly popular), the C64, CPC
 and the Atari ST.

Ultima IV would be released for the Atari ST in 1987 and the Amiga in 1998,
 having been originally developed for the Apple II in 1985. Previous outing
 Ultima III had been released for both 16-bit platforms in 1986, while sequel
 Ultima V would be released for all platforms by 1989.

Finally, the first chapter in the long-running RPG series **Might and Magic**
 would begin to gain traction in 1987. Initially self-published by
 creator Jon Van Caneghem for the Apple II after three years of devel-
 opment, the game would eventually be picked up by Activision and
 ported to a dozen different platforms, including the Macintosh.

From Origin comes the long-awaited sequel to the award-winning **Ultima III**

Ultima IV

Quest of the Avatar

A state-of-the-art fantasy role-playing game of unprecedented magnitude by Lord British.

Prepare yourself for a grand adventure: **Ultima IV**, sixteen times longer than **Ultima III**, is a milestone in computer gaming—now that challenge your physical and mental skills while testing the true limits of your character. Enter Britannia, Kingdom of Lord British. Journey through terrain of infinite proportions, conversing with characters on hundreds of topics. Unravel the mysteries of a magical magic system. At each turn beware of dragons, demons and long-dead wizards haunting the most treacherous of places. Encounter with parties of misadventurous types test your strategic abilities. Shrewd use of terrain can lead to victory against seemingly impossible odds. Conquer this multi-quest fantasy, then begin the final conflict, your quest of the Avatar. The ultimate challenge—the self—awaits...

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The latest adventure in the award-winning Ultima saga

Ultima V

Warriors of Destiny

Knightmare

An Adventure in a Epic

Ultima IV's Lord British, now as a Knight, leads you on a journey of discovery and adventure. You will find out what makes you think that you are invincible. You will find out what makes you think that you are invincible. You will find out what makes you think that you are invincible.

ULTIMA V: WARRIORS OF DESTINY. MSX, APPLE II, ATARI 2600, C64, ZX SPECTRUM, AMIGA, ATARI ST, IBM PC, DOS, MACINTOSH, TURBOGRAFX-16, SEGA GENESIS, SUPER 32X, SNES, NINTENDO 64, PS1, PS2, PS3, PS4, PS5, XBOX, XBOX 360, XBOX ONE, XBOX SERIES X, XBOX SERIES S, XBOX ONE S, XBOX ONE X, XBOX ONE XS, XBOX ONE XS MAX, XBOX ONE XS MAX 2, XBOX ONE XS MAX 3, XBOX ONE XS MAX 4, XBOX ONE XS MAX 5, XBOX ONE XS MAX 6, XBOX ONE XS MAX 7, XBOX ONE XS MAX 8, XBOX ONE XS MAX 9, XBOX ONE XS MAX 10, XBOX ONE XS MAX 11, XBOX ONE XS MAX 12, XBOX ONE XS MAX 13, XBOX ONE XS MAX 14, XBOX ONE XS MAX 15, XBOX ONE XS MAX 16, XBOX ONE XS MAX 17, XBOX ONE XS MAX 18, XBOX ONE XS MAX 19, XBOX ONE XS MAX 20, XBOX ONE XS MAX 21, XBOX ONE XS MAX 22, XBOX ONE XS MAX 23, XBOX ONE XS MAX 24, XBOX ONE XS MAX 25, XBOX ONE XS MAX 26, XBOX ONE XS MAX 27, XBOX ONE XS MAX 28, XBOX ONE XS MAX 29, XBOX ONE XS MAX 30, XBOX ONE XS MAX 31, XBOX ONE XS MAX 32, XBOX ONE XS MAX 33, XBOX ONE XS MAX 34, XBOX ONE XS MAX 35, XBOX ONE XS MAX 36, XBOX ONE XS MAX 37, XBOX ONE 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Popularized by glam-rock, new wave and synth-pop bands such as **Devo**, the “**keytar**” allowed keyboardists to get out from behind the synthesizers and perform on stage. Originally a full-blown synthesizer itself, later models were merely MIDI controllers.

This popularity led to consumer demand for versions targeted at amateur musicians, and **Yamaha** answered with the **SHS-10**, a miniature version with 32 small keys and a 25-instrument in-built FM synthesizer. Like its larger cousins, it has a MIDI-out port for controlling other equipment, and its demonstration song is an arrangement of **Wham's** “**Last Christmas**”.

The “**ghetto blaster**” or “**boombox**” were common terms for **large portable stereos** which gradually increased in size during the 1980s as listeners of hip-hop music demanded greater levels of bass from their units, culminating in the **Tecsonic Super Jumbo J-1**, made famous in the **Spike Lee** movie “**Do The Right Thing**”. With dual 8” woofers and 20 watts of power per side, this 25-pound (11kg) beast led to numerous cities **banning boomboxes** from public places.



BUILD THIS

OMAS L. JOZWIAK

ELECTRONIC XMAS TREE

This pocket-size electronic Christmas tree will give your holiday lighting a new and festive look.

FOR ABOUT \$10 YOU CAN BUILD A UNIQUE, high-tech Christmas tree that will add a new and festive look to both your home and office holiday decorations. And because it's powered by two AA batteries, if you can't be home for the holidays you can pack one along in a suitcase to remind you of your loved ones.

The electronic Christmas tree is really a 6½-inch high tree-shaped printed-circuit board that's outlined by what appears to be randomly-blinking red, green, and yellow LEDs. The tree's trimming is the components for the electronic circuit that makes the LED's wink and blink. The Christmas tree's base consists of two AA-size battery holders cemented together with the tree's PC board sandwiched between the two. A little imaginative spray painting before the components are installed puts a realistic finishing touch to the Christmas-tree project.

Because the LED's are continuously cycled on and off, two alkaline batteries provide more than 300 hours of continuous operation; that's enough to provide almost two full weeks of window display or entertainment before the batteries need to be replaced.



Radio Electronics published these plans to make an electronic Christmas tree, with parts list and a circuit board.



This page reprints everything you need to build this project yourself.

Construction

The PC board can be made photographically using the foil pattern shown in PC Service, or the pattern can be used as a guide for applying liquid and tape resist by hand. Although the foil pattern itself is only 5-inches high, the PC board material must be 6½ inches high because the tree's 1½-inch trunk is part of the PC board. Since etching large copper areas not only takes excessive time but also shortens the life of the etchant, we suggest you trim away the unwanted PC board material before you etch the board. Or, if you prefer to cut the tree to size after the pattern is etched, protect the foil of the large unused trunk area with resist and simply let the copper remain. As long as the trunk's foil doesn't come in contact with any of the circuit traces it makes no difference whether it's there or not.

If you want to decorate the front of the tree, do it before the holes for the components are drilled. For example, the author sprayed the component side with a bright automotive metallic-green paint. To prevent a defined line, a cardboard mask was held about ½ inch above the board. Then, the edge of the PC board was "dusted" with a fine mist of white paint to simulate snow. After allowing for adequate drying, again using a cardboard mask, the trunk portion of the board was painted with a metallic-brown paint.

Allow the decorative paint to dry overnight before drilling the component mounting holes. Then install and solder the eight jumpers, the resistors, the IC's, and the capacitors. Then insert all the LED's, observing the polarities shown in Fig. 2. Position the LED's so that they are raised approximately ½ inch off the board. To do that, turn the board over and lay it down on a flat surface, being careful not to allow any LED's to fall out; that can be done easily by holding a piece of stiff cardboard against the LED's while turning the board over. Keeping the board parallel to your work surface, solder one lead of each LED. Turn the board over and carefully look across the surface to see whether the LED's are straight and at the same height. If not, correct as needed. When you're satisfied with their alignment, solder the other lead of each LED.

Adding the base

Prepare the surfaces of the battery holders and the PC board for gluing by sanding the back of each holder and a ½-inch strip on both sides of the circuit board at the bottom of the trunk. Mix a small amount of a 5-minute epoxy and apply some to the ½-inch strip on both sides of the circuit board. With the battery polarities opposite

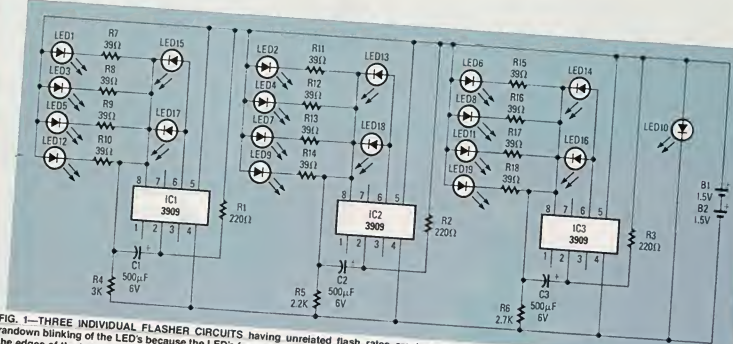


FIG. 1—THREE INDIVIDUAL FLASHER CIRCUITS having unrelated flash rates create a pseudo-random blinking of the LED's because the LED's from each individual circuit are intermixed around the edges of the tree.

How it works

As shown in Fig. 1, three individual flasher circuits that use an LM3909 LED flasher/oscillator IC create the appearance of a pseudo-random firing order. The combination of C1/R4, C2/R5, and C3/R6 control the blink rate, which is between .3 and .8 second, while the inherent wide

tolerance range (–20% to +80%) of standard electrolytic capacitors add to the irregularity of the blink cycles. The continuous current drain is about 10 mA; however, if you decrease the values of R4–6 or C1–3 in order to increase the blink rate, the current will then increase proportionately.

PARTS LIST

All resistors are ¼-watt, 5%.

R1–R3—200 ohms

R4—3000 ohms

R5—2200 ohms

R6—2700 ohms

R7–R18—39 ohms

Capacitors

C1–C3—500 µF, 6 volts, electrolytic

Semiconductors

IC1–IC3—LM3909, LED flasher

LED1, LED4, LED7, LED13, LED16, LED19—Red, diffused 5-mm LED

LED2, LED5, LED6, LED11, LED14, LED17—Yellow, diffused 5-mm LED

LED3, LED8, LED9, LED12, LED15, LED18—Green, diffused 5-mm LED

LED10—Red flasher LED (Radio Shack 270-401 or equivalent)

Other Components

B1, B2—1.5-volt AA alkaline battery

Miscellaneous: battery holders, PC board, wire, solder, etc.

Note: An etched and drilled PC board is available for \$10 postpaid from Fen-Tek P.O. Box 5012, Babylon, NY 11707-0012. NY residents must add appropriate sales tax.

Note in particular that external current-limiting resistors aren't needed for LED13 through LED18; the resistors are built into the IC's. LED10, which serves as the tree's "star," is a special kind of flashing LED that blinks continuously at a fixed rate.

Power can be turned off by simply removing either battery, or by slipping a small piece of paper between any battery and either of its battery-holder terminals. Of course, a switch can also be added.

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RADIO-ELECTRONICS

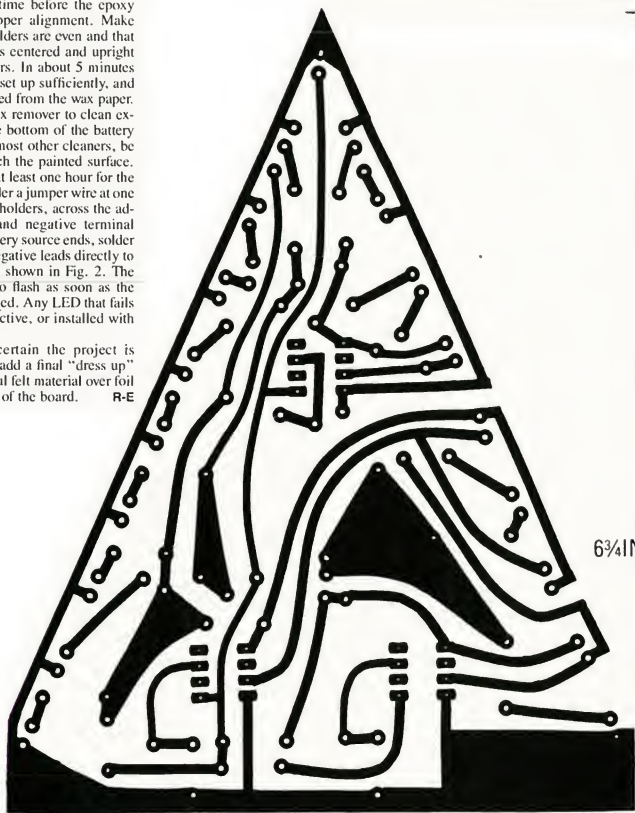
FIG. 2—TAKE EXTRA CARE THAT THE LED'S are installed with the correct polarities. If you want to decorate the "tree," do it before drilling the mounting holes for the components.

each other, sandwich the PC board between the holders. Hold the assembly firmly on a flat surface that's covered with a piece of wax paper. You will have a few minutes working time before the epoxy sets to ensure proper alignment. Make certain that the holders are even and that the circuit board is centered and upright between the holders. In about 5 minutes the glue will have set up sufficiently, and the tree can be lifted from the wax paper. Use acetone or flux remover to clean excess glue from the bottom of the battery holders. As with most other cleaners, be careful not to touch the painted surface.

After allowing at least one hour for the epoxy to cure, solder a jumper wire at one end of the battery holders, across the adjacent positive and negative terminal lugs. From the battery source ends, solder the positive and negative leads directly to the foil traces—as shown in Fig. 2. The LED's will start to flash as soon as the batteries are installed. Any LED that fails is most likely defective, or installed with reversed polarity.

When you're certain the project is working, you can add a final "dress up" by gluing a colorful felt material over foil traces on the back of the board.

R-E



6 1/2 INCHES

LIGHT UP THE HOLIDAYS with the electronic Xmas tree. The PC board for that project is shown here.

A vintage computer monitor with a beige frame. The screen is black and displays the text "a HUGE Thank You to all of our Kickstarter backers!" in a bright green, pixelated font. The monitor is part of a larger beige unit, with two horizontal slots and small red indicator lights visible below the screen.

a HUGE
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to all of our
Kickstarter
backers!

Thanks to you,

palaeotronic
is coming...

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Mill

John Murvine



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Christmas

2023